



Ixodes ricinus seasonal activity: Implications of global warming indicated by revisiting tick and weather data

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Abstract:

Zoonotic tick-borne diseases are an increasing health burden in Europe and there is speculation that this is partly due to climate change affecting vector biology and disease transmission. Data on the vector tick *Ixodes ricinus* suggest that an extension of its northern and altitude range has been accompanied by an increased prevalence of tick-borne encephalitis. Climate change may also be partly responsible for the change in distribution of *Dermacentor reticulatus*. Increased winter activity of *I. ricinus* is probably due to warmer winters and a retrospective study suggests that hotter summers will change the dynamics and pattern of seasonal activity, resulting in the bulk of the tick population becoming active in the latter part of the year. Climate suitability models predict that eight important tick species are likely to establish more northern permanent populations in a climate-warming scenario. However, the complex ecology and epidemiology of such tick-borne diseases as Lyme borreliosis and tick-borne encephalitis make it difficult to implicate climate change as the main cause of their increasing prevalence. Climate change models are required that take account of the dynamic biological processes involved in vector abundance and pathogen transmission in order to predict future tick-borne disease scenarios.

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Resource Description

Early Warning System: ☒

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☒

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Temperature

Temperature: Fluctuations

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Ireland

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Tick-borne Disease

Tick-borne Disease: General Tick-borne Disease

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Historical

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content